

100
FIG. 1A

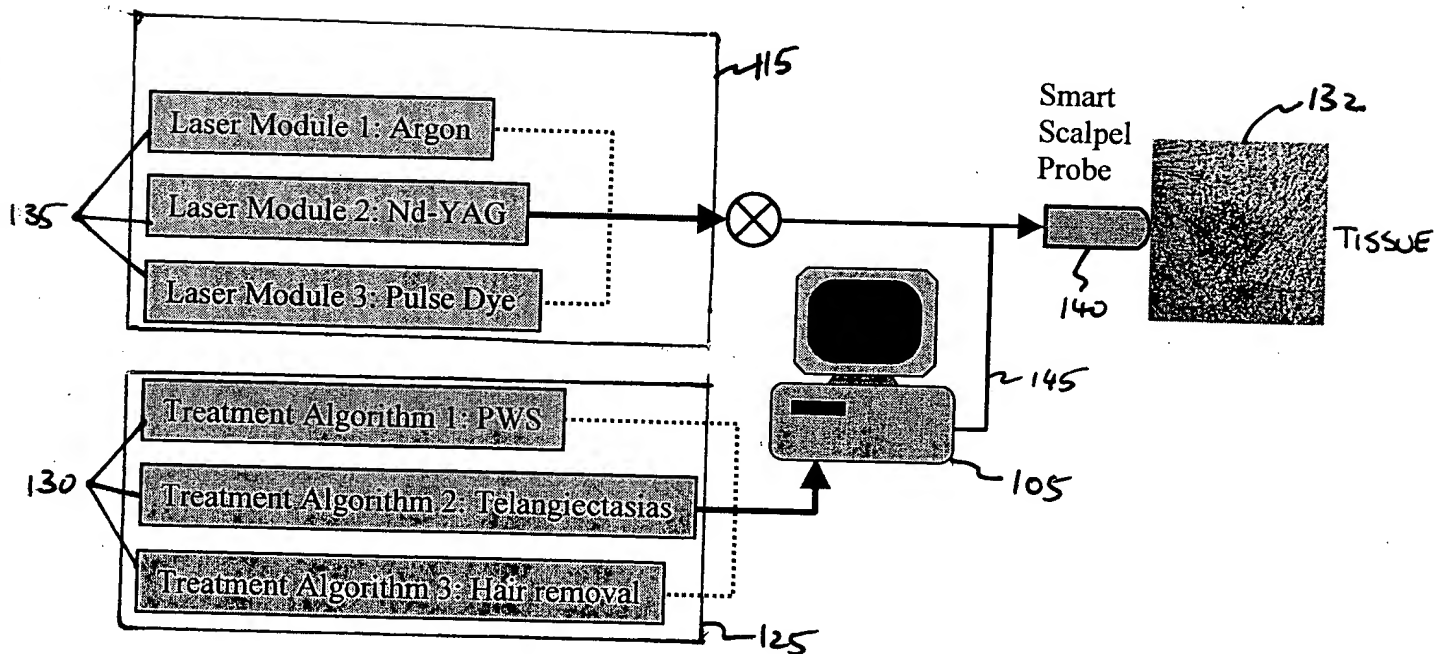


FIG. 1B

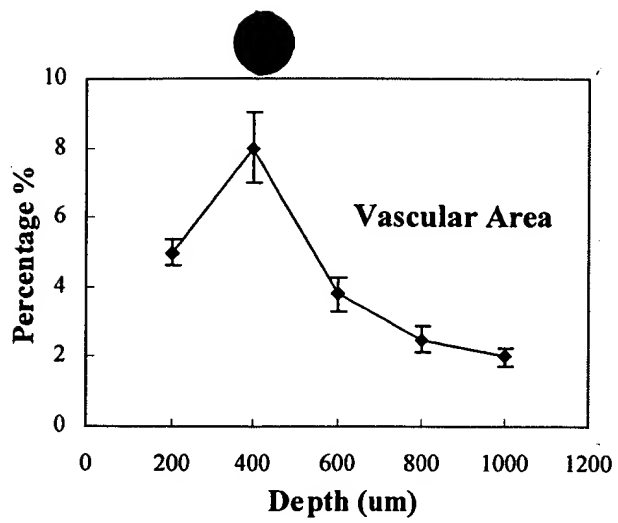


FIG. 3A

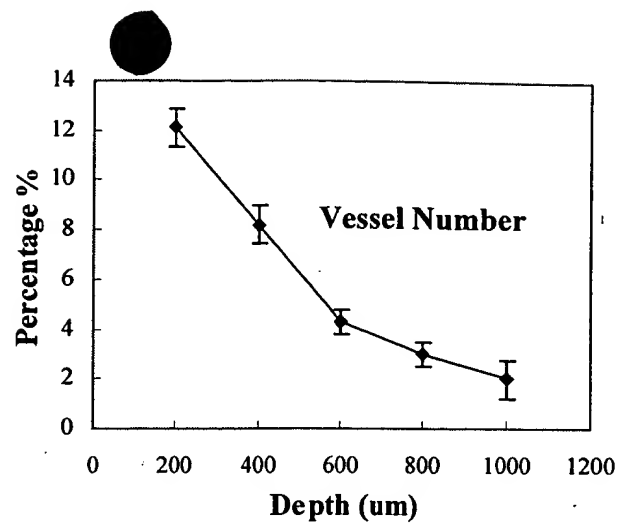


FIG. 3B

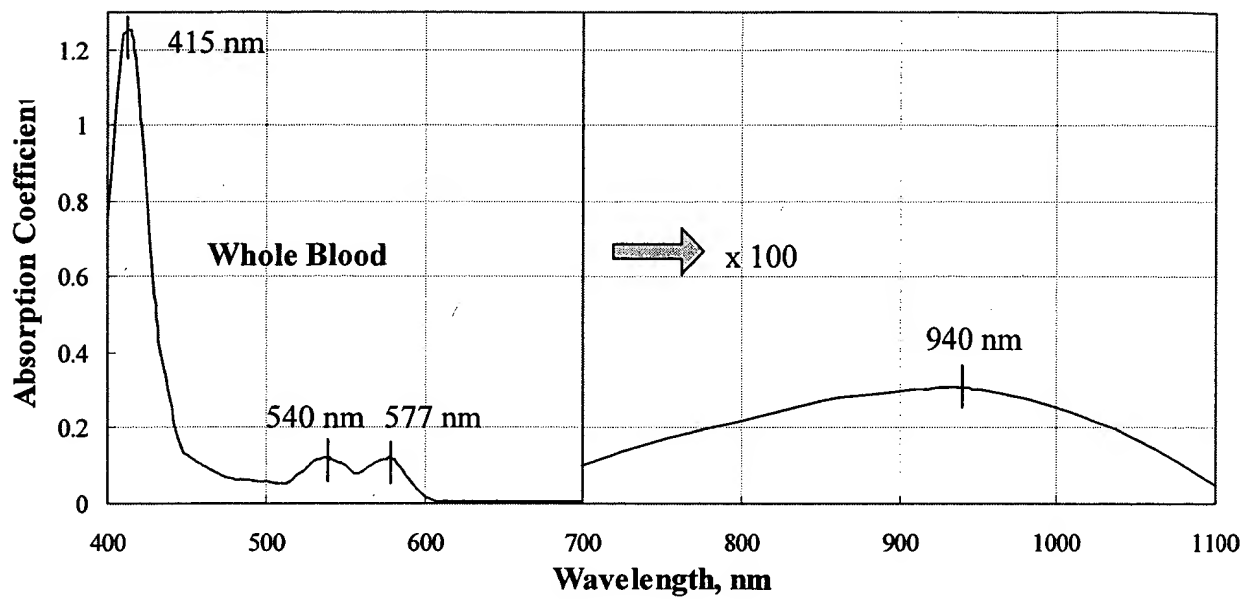


FIG. 4

Laser	Wavelength (nm)	Treat Fluence (J/cm²)	Type
Argon	488, 514	1-10	CW
Classic KTP	532	10-40	CW
Cu or Cu-Br	512-578	1-10	CW
Krypton	570	1-10	CW
Pulse dye (yellow)	585	4-8	Pulsed
Derm-KTP	532	2-20	Pulsed
Pulsed dye (green)	510	3-5	Pulsed
Q-sw. Nd:YAG – green	532	3-5	Pulsed
- infrared	1064	4-10	
Q-sw. Ruby (red)	694	4-10	Pulsed
Q-sw. Alexandrite (infrared)	755	4-10	Pulsed

FIG. 5

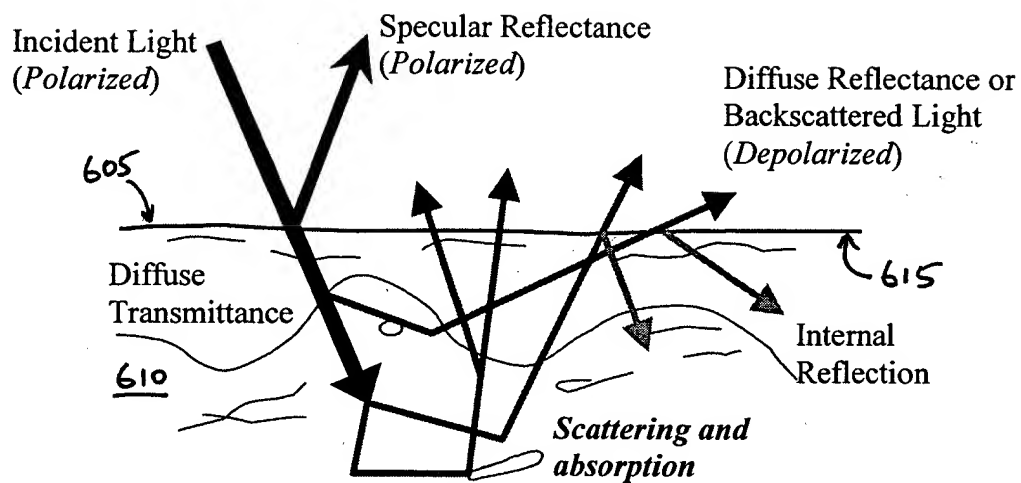


FIG. 6

Tissue	λ (nm)	μ_a (mm ⁻¹)	μ_s (mm ⁻¹)	G	μ_s' (mm ⁻¹)	μ_t (mm ⁻¹)
Human dermis	633	0.27	18.7	0.81	3.553	3.823

FIG. 7

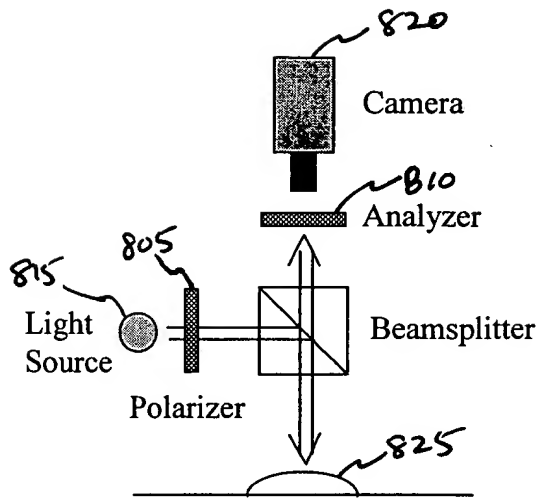


FIG. 8A

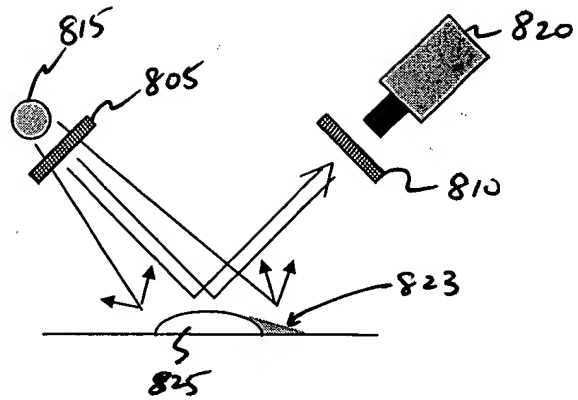


FIG. 8B

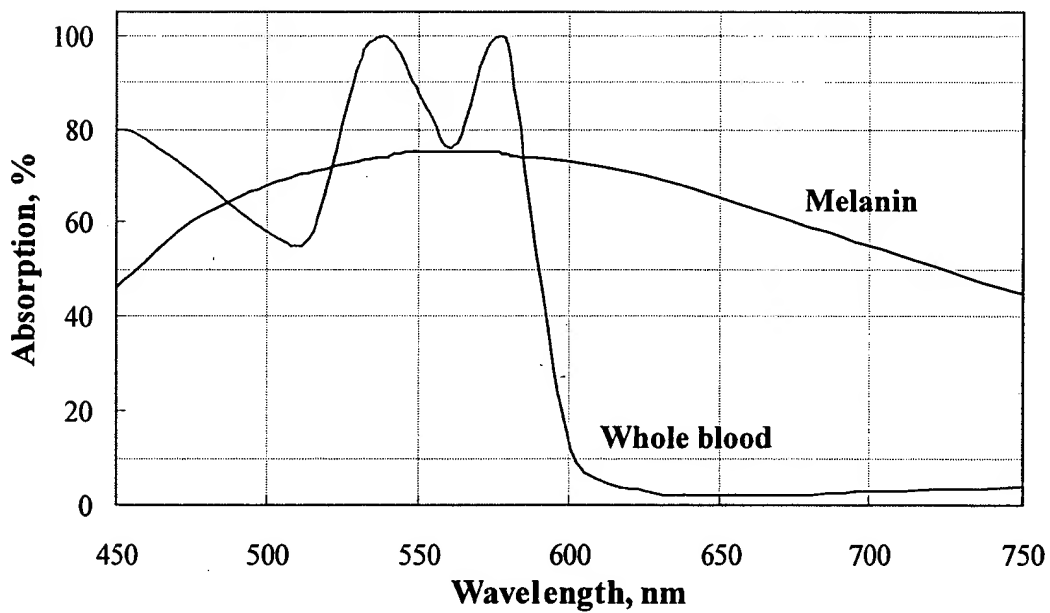


FIG. 9

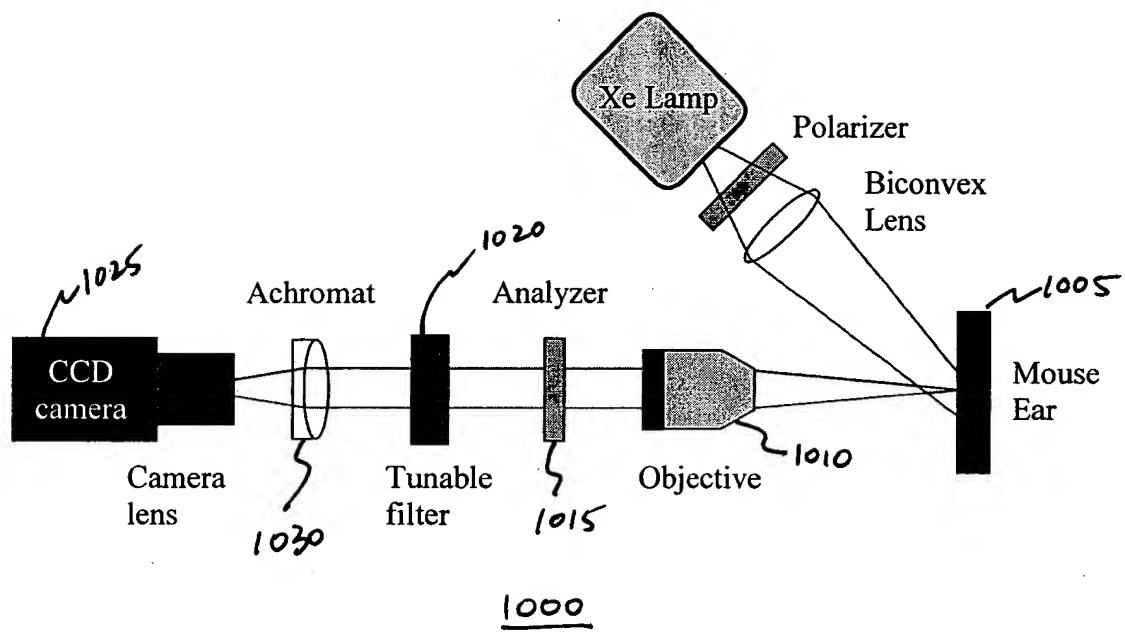


FIG. 10

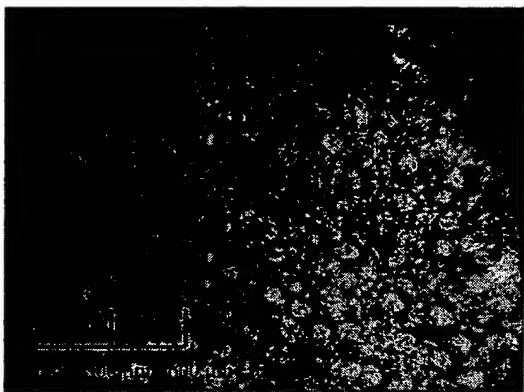


FIG. 11A

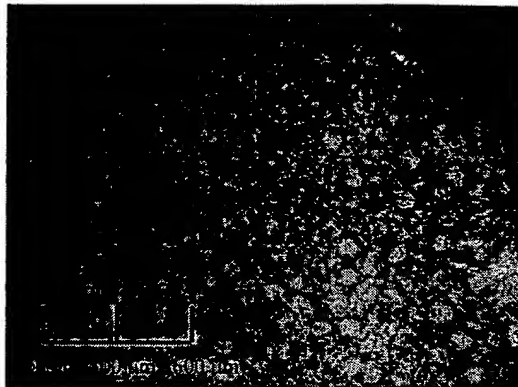


FIG. 11B



FIG. 11C

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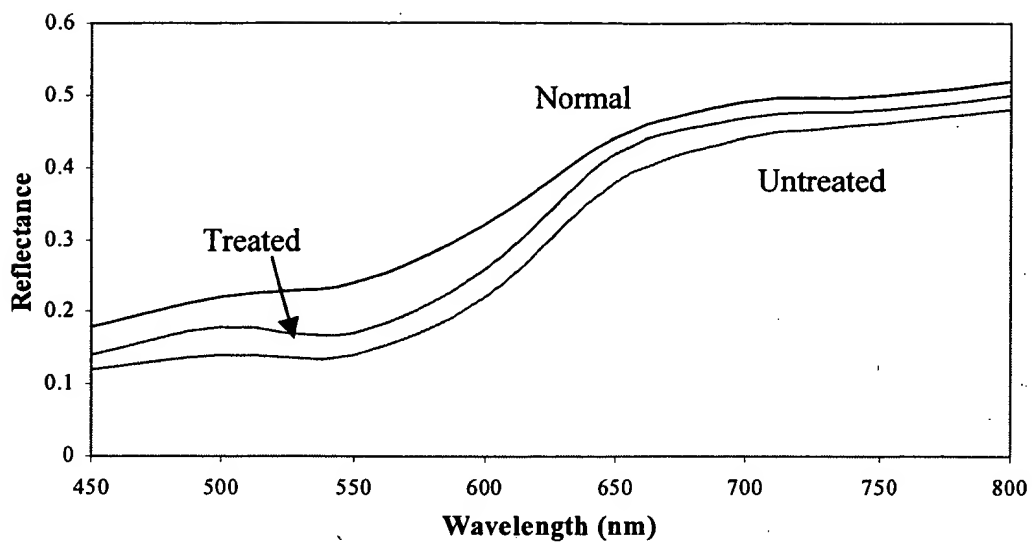
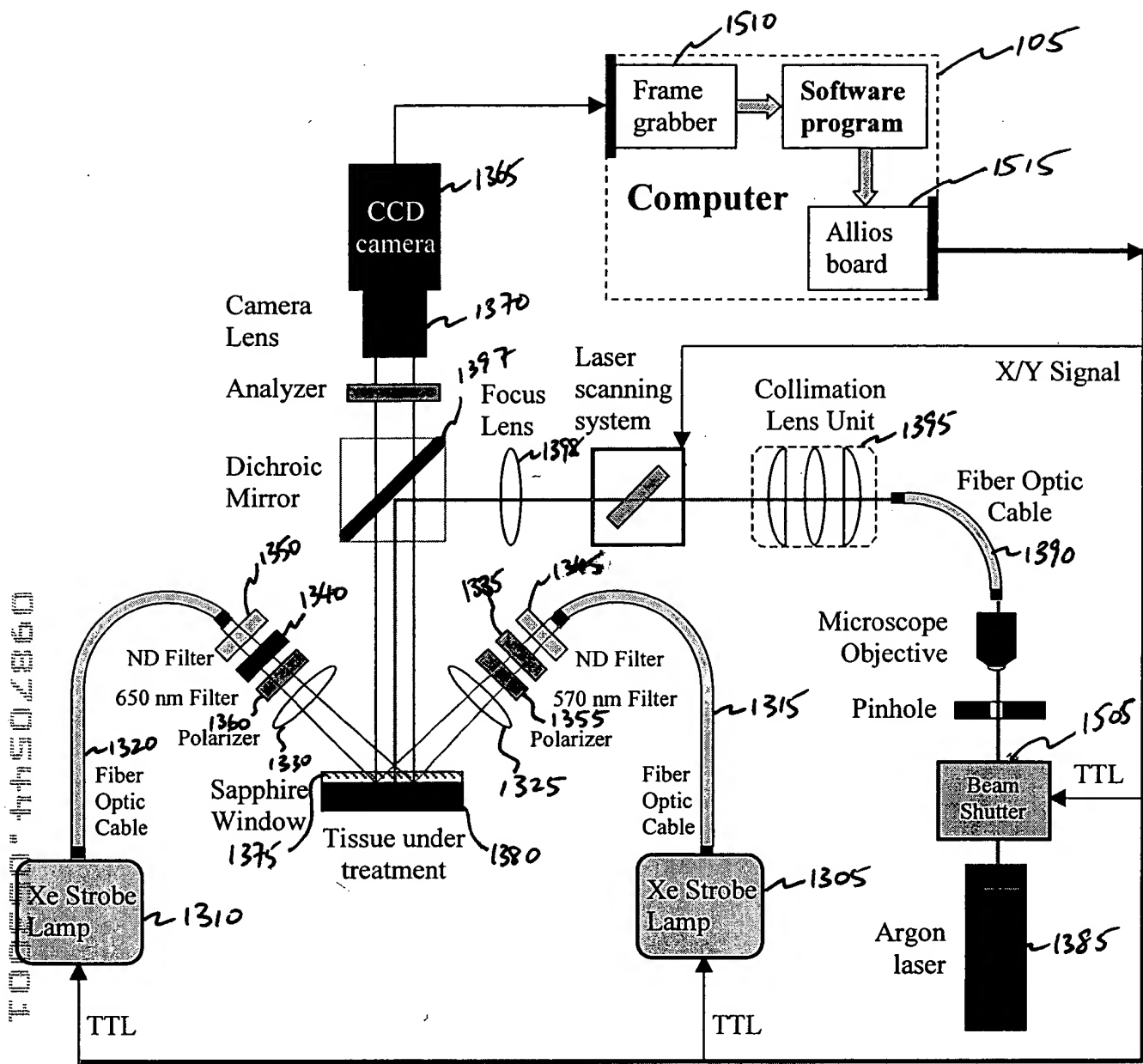


FIG. 12



1300
FIG. 13

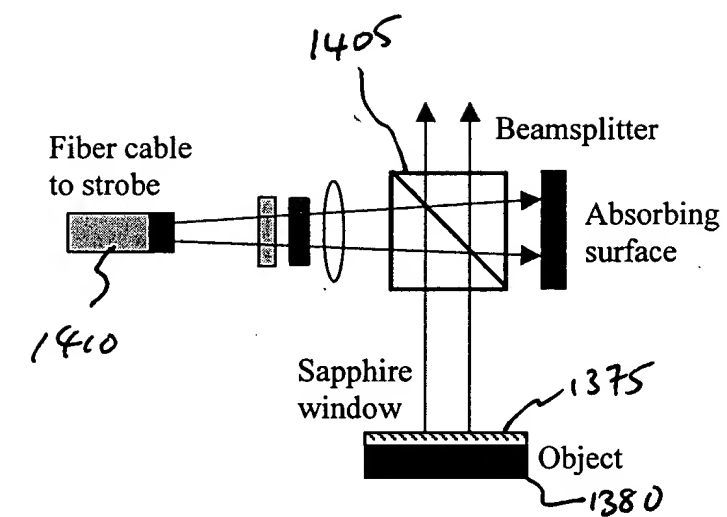


FIG. 14

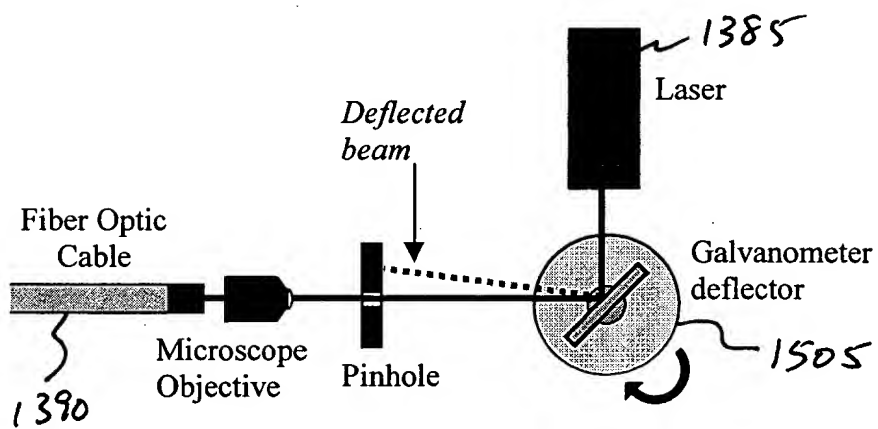


FIG. 15

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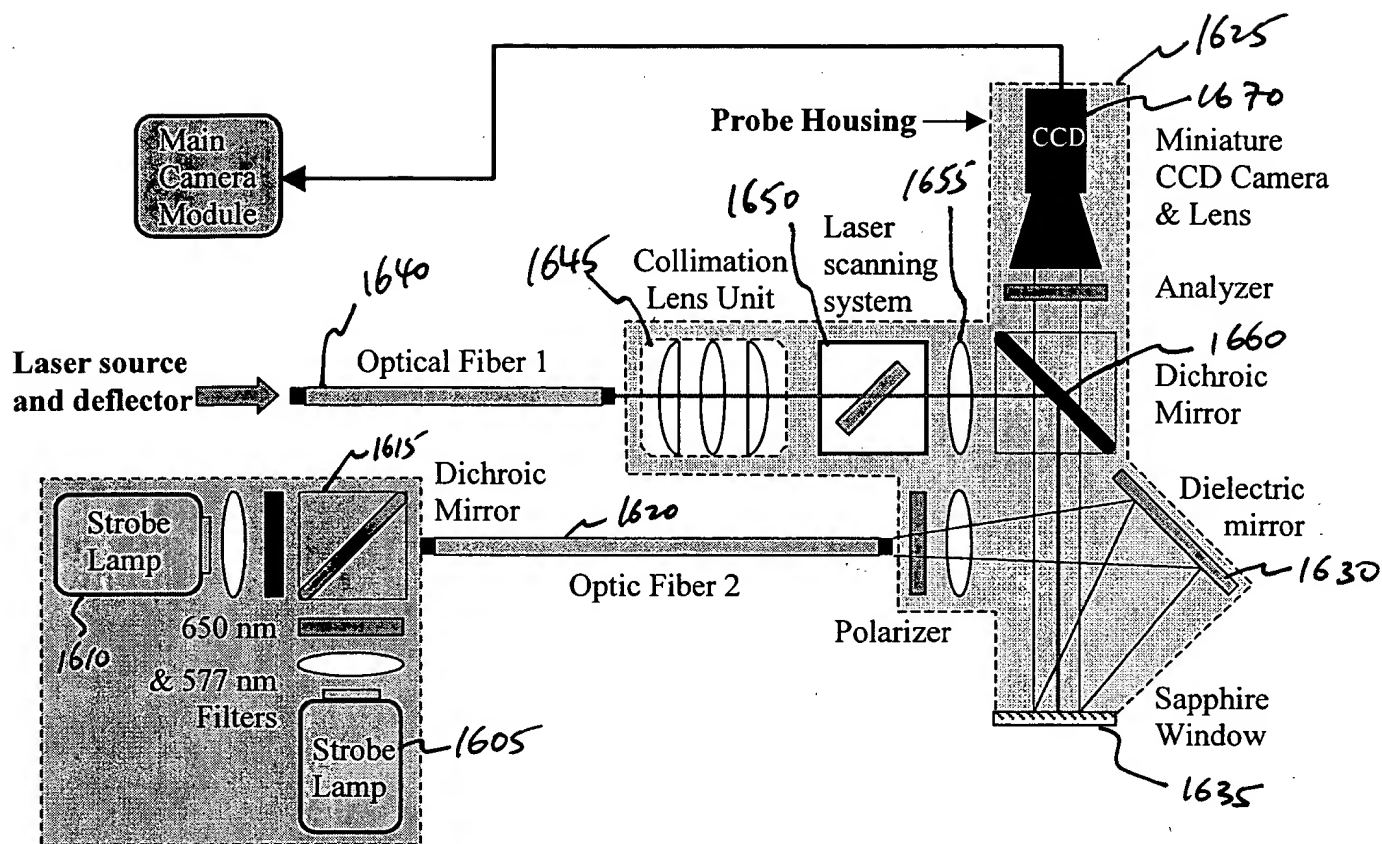


FIG. 16

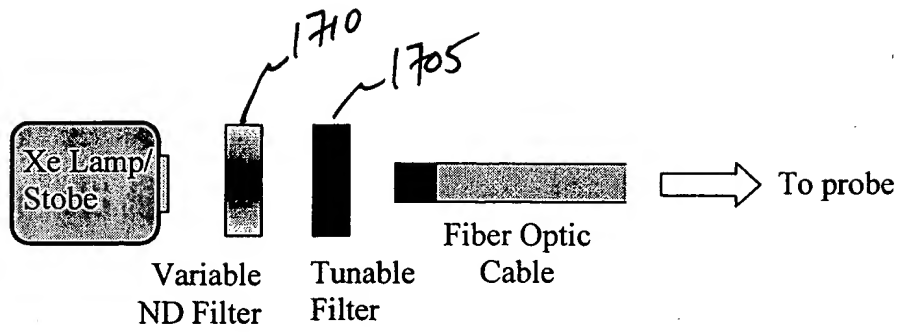


FIG. 17

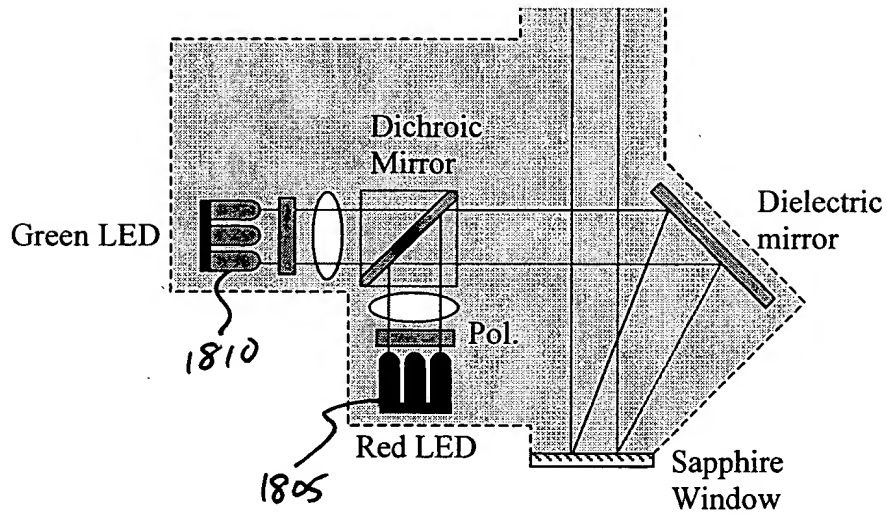


FIG. 18

Parabolic Line Profile

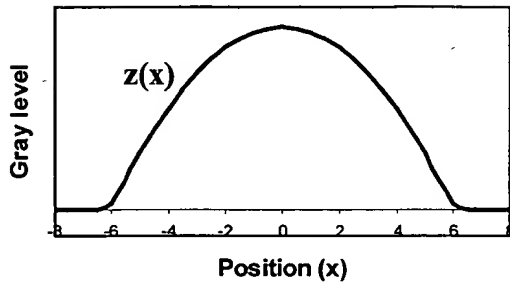


FIG. 19A

First Derivative Profile

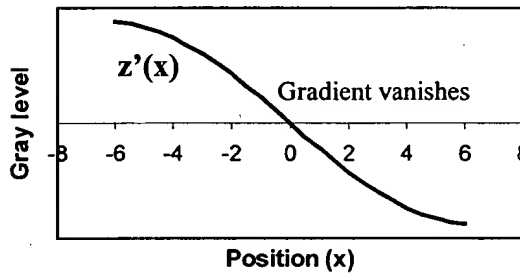


FIG. 19B

Second Derivative Profile

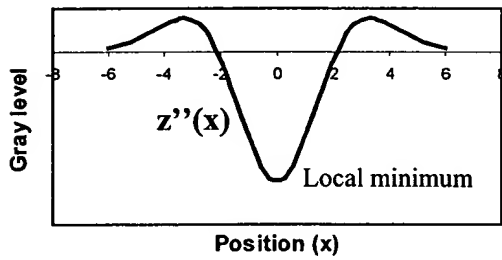


FIG. 19C

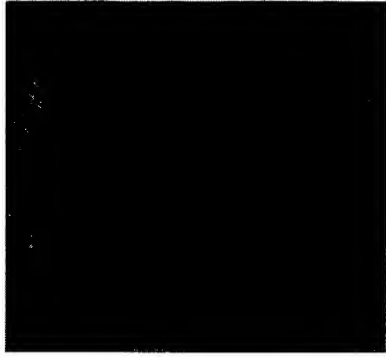


FIG. 20A



FIG. 20B

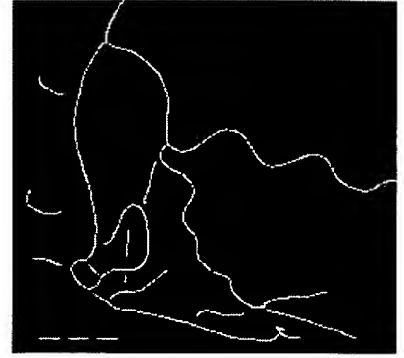


FIG. 20C

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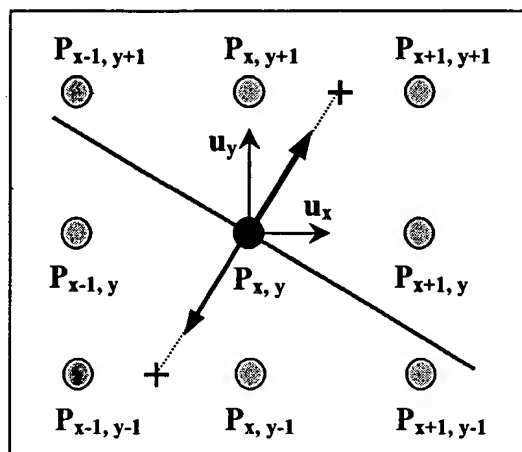


FIG. 21

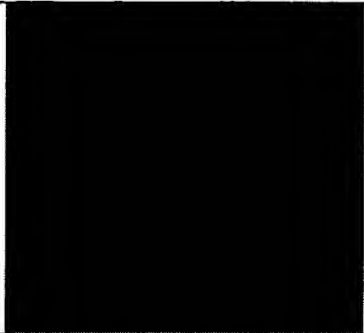







Characteristic of Noise Added	Noise added image	Result of algorithm
No noise added		
$\mu = 0.0$ $\sigma = 0.00008$		
$\mu = 0.0$ $\sigma = 0.0002$		
Histogram rescaled to reduce contrast		

FIG. 22

No.	Process	Time (sec)
1.	Direct Convolution: $\sigma = 3.0$	3.9
2a.	Recursive Filtering: $\sigma = 3.0$ <i>4th order IIR filter</i>	3.3
2b.	<i>3rd order IIR filter</i>	3.0

FIG. 23

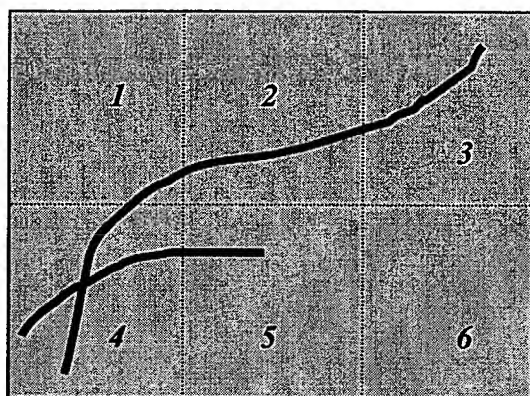


FIG. 24A

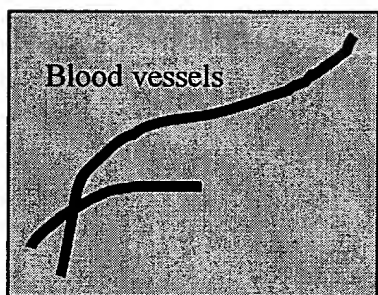


FIG. 24B

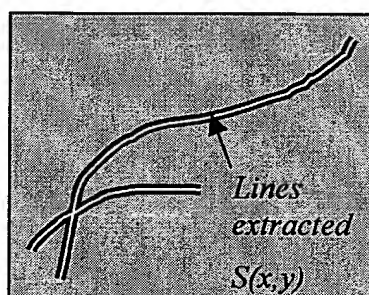


FIG. 24C

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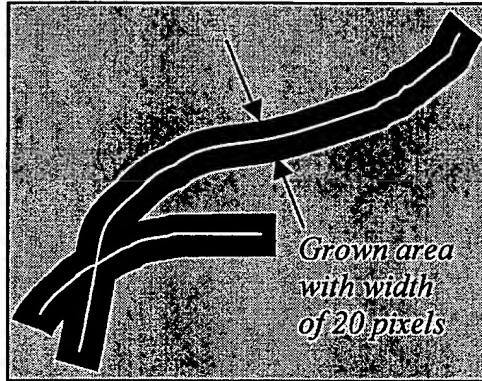


FIG. 24D

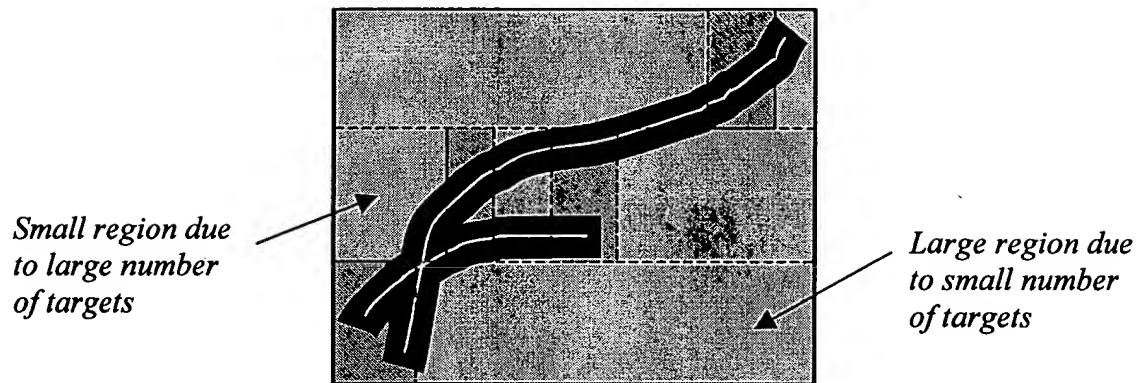


FIG. 24E

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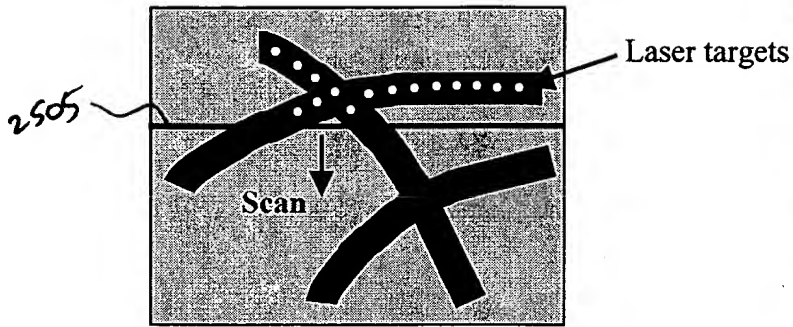


FIG. 25A

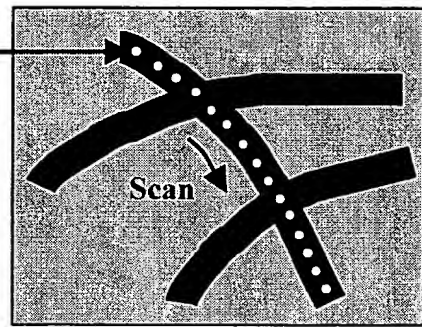


FIG. 25B

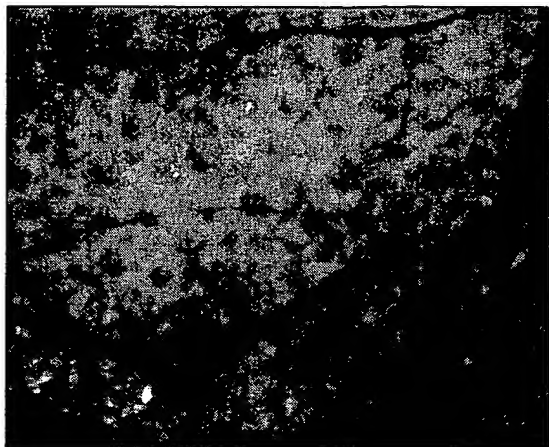


FIG. 26A

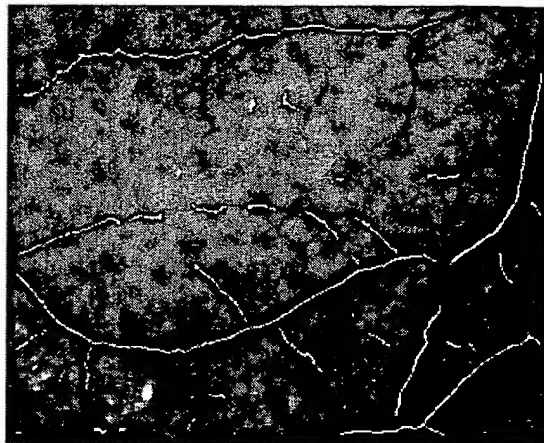


FIG. 26B

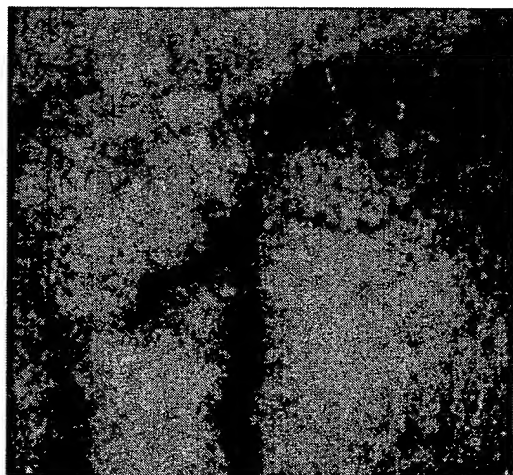


FIG. 27A

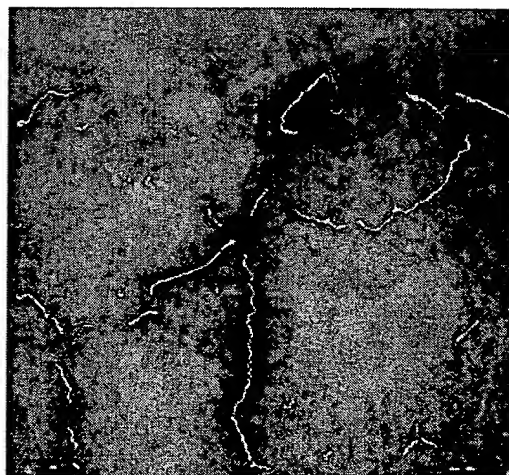


FIG. 27B

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Laser	Coherent Innova 100 CW Argon Laser
Wavelength	514 nm
Beam diameter	750 μm
Power	1 watt
Pulse width	80 ms (CW laser pulsed mechanically)
Fluence	$18.1 \times 10^4 \text{ J/m}^2$

Treatment laser parameters

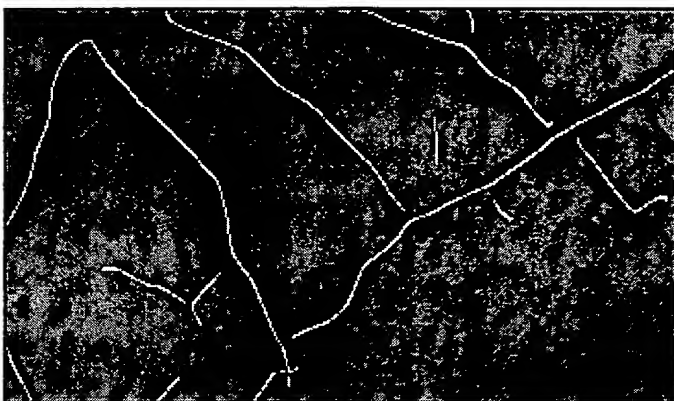
FIG. 28

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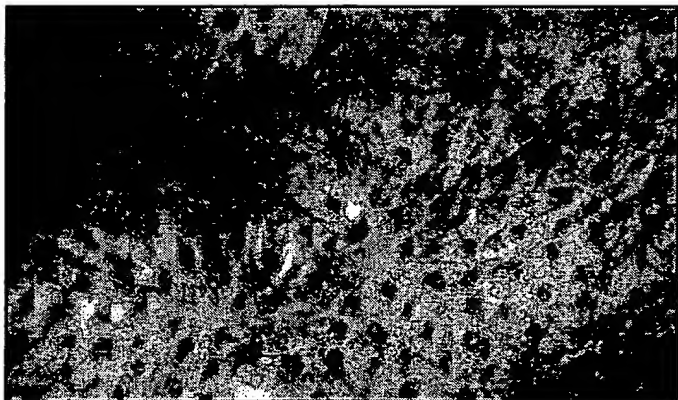
*Blood vessels before treatment
(illumination at 577 nm).*

FIG. 29A



*Targets identified by the Smart
Scalpel.*

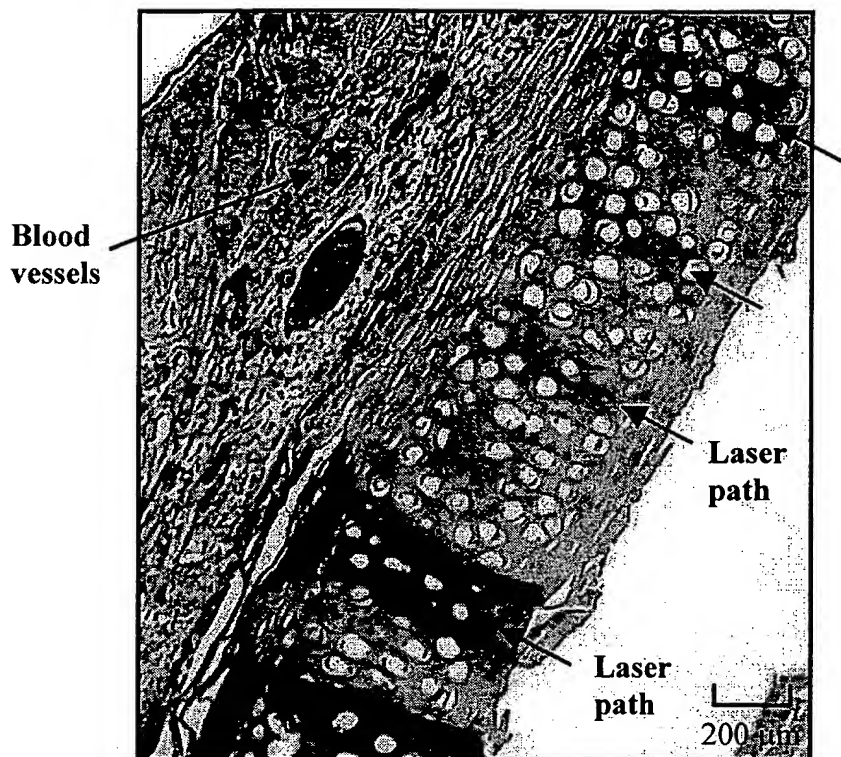
FIG. 29B



*Blood vessels immediately after
treatment.*

FIG. 29C

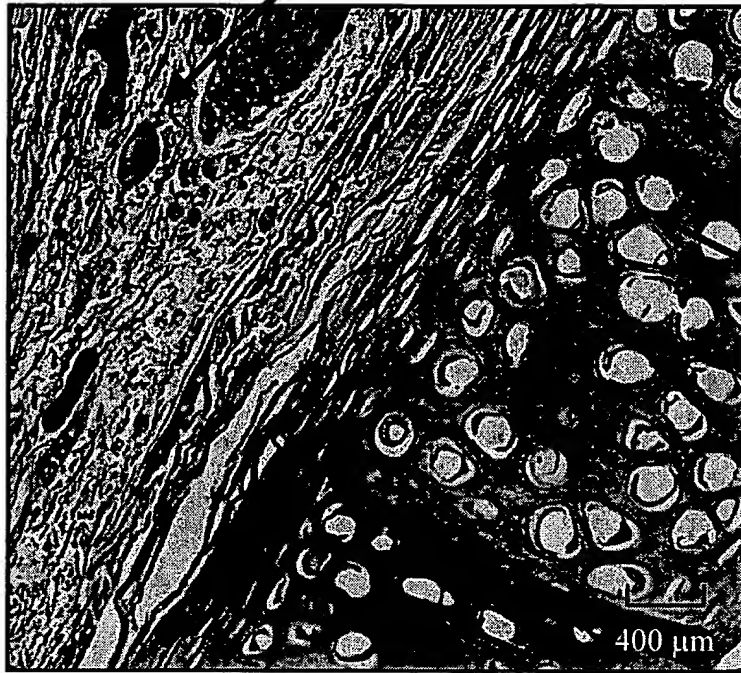
FOI 50-44502360



Histology results

FIG. 30

Blood
Coagulation



Laser
path

Close-up view showing coagulated blood vessels

FIG. 31

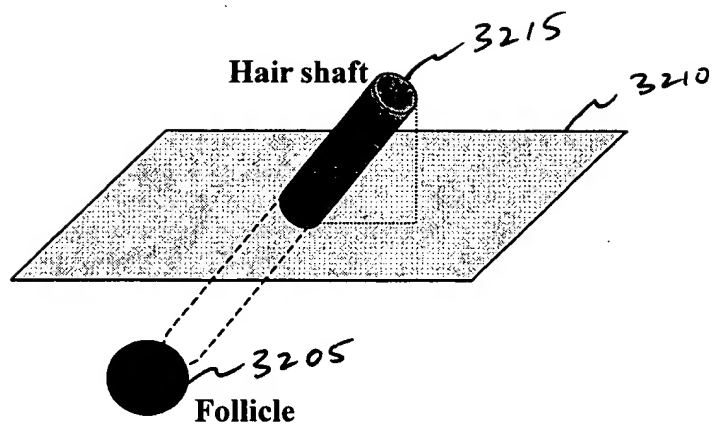


FIG. 32A

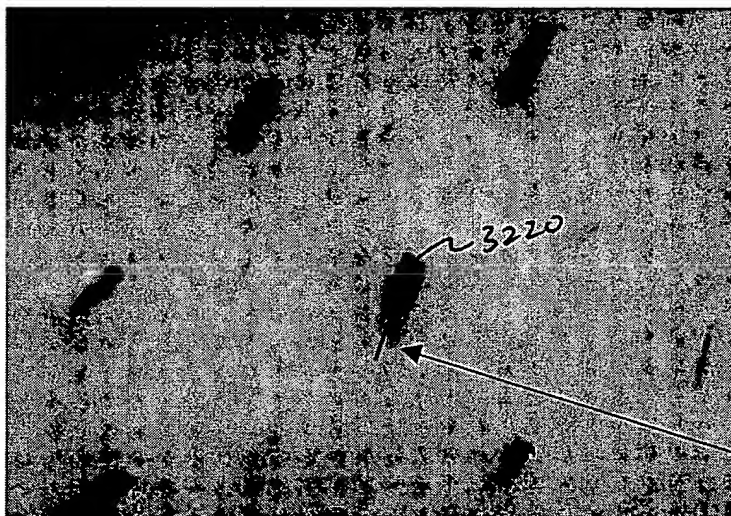


FIG. 32B

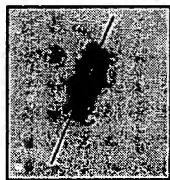


FIG. 32C

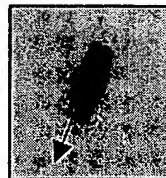
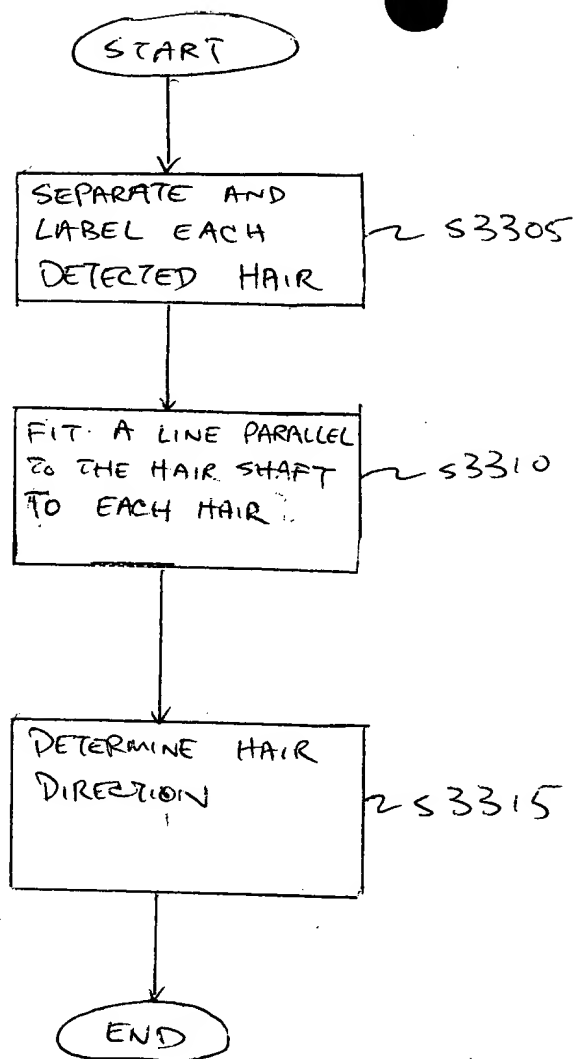


FIG. 32D

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3300

FIG. 33